DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Casey, William
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-026643
Date Inspected: 02-Nov-2011

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 600
OSM Departure Time: 1630
Location: Job Site

CWI Name: See Below

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG

Summary of Items Observed:

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the SAS project site and observed the work and the inspection performed by American Bridge/Fluor Enterprises (AB/F) personnel. The inspection was performed as noted below:

A). This Quality Assurance Lead Inspector (QALI) assigned the QAI, Art Peterson, to the following but not limited to the work stations listed below, to observe the welding and the QC inspection:

1). OBG W13/W14
2). Lifting Lug Holes (LLH)

1A). At the start of the shift QA Inspector, Art Peterson, observed the Complete Joint Penetration (CJP) welding of the field splice identified as 13W-14W-D. The welding was perfomed utilizing the Sub-Merged Arc Welding (SAW) as per the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1, Rev. 0 which was utilized by the QC Inspector, Patrick Swain, as a reference to monitor the welding, verify the welding parameters, the minmum preheat and maximum interpass temperatures. Mr. Peterson also observed and monitored the inspection performed by the QC inspector.

1B). At the conclusion of the joint inspection the QAI, Mr. Peterson, observed the fillet welding (continuous tack weld) of the "A" deck plate, designated as Seismic Performance Critical Member (SPCM), to the backing bar identified as 13W-14W-A2 through A5. The welding was performed by Xiao Jian Wan ID-9667 and Wai Kitlai ID-2953 utilizing the Flux Cored Arc Welding w/gas (FCAW-G) as per the Welding Procedure Specification (WPS) ABF-WPS-D15-F3200-2, Rev. 0. The weld inspection was performed by the QC inspector, Mr. Swain,

utilizing the WPS as a reference. The welding was completed during this shift. For additional information regarding planar alignment joint inspection see QAI Summary on page 4 of this report.

2). Mr. Peterson also observed the Complete Joint Penetration (CJP) groove welding of the LLH located at OBG W11 and identified as12W-PP114-W3-W3. The welding was performed by the welder, Salvador Sandoval ID-2202 utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS identified as ABF-WPS-D15-1050A-CU. The QAI observed the QC Inspector, Patrick Swain, monitor the welding and verified the welding parameters utilizing the WPS as a reference. The welding of the "A" face was completed at both locations during this shift.

B). This Quality Assurance Lead Inspector (QALI) assigned the QAI, Joselito Lizardo, to the following, but not limited to the work stations listed below, to observe the welding and QC inspection:

1). Cross Beam # 1, Service Platform
2). OBG Survey

1). At the start of the shift the QAI, Joselito Lizardo, observed the welders Eric Sparks ID-3040 and Todd Jackson ID-4639 performing work of the stair tread modifications due to the incorrect rise dimension of shop fabrication of approximately 297 mm. This work was not completed during this shift and was performed in reference to RFI, ABF-RFI-002417R00.

2). The QAI also performed a survey of various open items in regards to QA verification. These items were generated by this QA lead inspector at the conclusion of review OBG tracking documentation. This survey was not completed during this shift.

C). This Quality Assurance Lead Inspector (QALI) assigned to the QAI, Craig Hager, to the following but not limited to the work stations listed below, to observe the welding and QC inspection:

1). OBG 13E/14E
2). OBG 12W/13W

1A). The QAI, Mr. Hager, observed the Complete Joint Penetration (CJP) groove welding of the bottom plate field splice identified as 13E-14E-D3. The welding operator Jin Pei Wang ID-7299 performed the Flux Cored Arc Welding w/gas (FCAW-G) as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-3110-4, Rev. 0. The QC inspector also utilized the WPS as a reference to monitor the welding and perform the weld inspection. The welding of this field splice was completed during this shift.

1B). Mr. Hager also observed the installation and welding of the temporary blank nuts and key plates utilized as part of the fitting gear assessories of the bottom plate field splice identified as 13E-14E-D1. The welding was performed by Rick Clayborn ID-2773 utilizing the Shielded Metal Arc Welding (SMAW) as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-F1200A, Rev. 2. The WPS was also utilized by the QC inspector Sal Merino to monitor the welding. This work was not completed during this shift. For additional information in regards to the planar alignment see QAI Summary on page 4 of this report.

2). The QAI also verified the fit-up of the longitudinal "A"deck stiffener identified as 12W-13W-A-LS4. This verification task was performed at the request per the QC inspector John Pagliero.

D). This Quality Assurance Lead Inspector (QALI) assigned to the QAI, Doug Frey, to the following but not

limited to the work stations listed below, to observe the welding and QC inspection:

1). Lifting Lug Holes (LLH)

1A). The QAI, Doug Frey, observed the welder, Jorge Lopez ID-6149, to perform the Complete Joint Penetration (CJP) welding of the LLH's identified as 11W-PP103-W4-W1and W3. The field welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1050A-CU. The WPS was also utilized by the QC inspector, John Pagliero, to monitor the welding and to perform the in progress weld inspection. The field fit-up was also verified by the QAI prior to the welding. The welding of the LLH (A-Face) was completed during this shift.

1B). Mr. Frey also observed CJP groove welding of the LLH identified as 11W-PP100-W3-W4. The welding was performed by Mike Jiminez ID-4671 utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS identified as ABF-WPS-D15-1050A-CU. The WPS was also utilized by the QC inspector, John Pagliero, to monitor the welding and perform the in progress weld inspection. The field fit-up was also verified by the QAI prior to the welding. The welding of the LLH (A-Face) was completed during this shift.

1C). Later in the shift, Mr. Frey observed CJP groove welding of the LLH identified as 11W-PP100-W4-W1. The welding was performed by Mike Jiminez ID-4671 utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS identified as ABF-WPS-D15-1050A-CU. The WPS was also utilized by the QC inspector, John Pagliero, to monitor the welding and perform the in progress weld inspection. The field fit-up was also verified by the QAI prior to the welding. The welding of the LLH (A-Face) was not completed during this shift.

D). This Quality Assurance Lead Inspector (QALI) assigned to the QAI, William Clifford, to the following but not limited to the work stations listed below, to observe the welding and QC inspection:

1). W12/W13
2). Skyway/Bike Path Handrail

1A). The QAI, Mr. Clifford, observed the welder, Fred Kaddu ID-2188, perform the CJP groove welding on the longitudinal stiffener field splice identified as WN: 12W-13W-A-LS4. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0 and was also utilized by the QC inspector John Pagliero as a reference.

1B). Later in the shift, Mr. Clifford, observed the QC inspector, Patrick Swain, perform a Magnetic Particle Test (MPT) of the back gouged surface of the aforementioned longitudinal stiffener LS4. There no rejectable indications noted at the time of the testing.

1C). Also, Mr.Clifford, observed the back gouging of the bottom plate field splice identified as 12W-13W-D. No welding was performed during this shift.

2). Mr. was also assigned by QA Supervisor, William Levell, to observed the removal handrail brackets as per the Contract Change Order (CCO) #179.

Quality Assurance Lead Inspector (QALI) Summary

Later in the shift, this QA Lead Inspector (QALI) also observed the QA Inspector's Craig Hager, Art Peterson and Joselito Lizardo monitor the work performed by the QC inspectors at random intervals and also observed the QA Inspectors verify the welding parameters, the minimum preheat and the maximum interpass temperatures. The

QAI's utilized a Fluke 337 clamp meter to measure the electrical welding parameters, Tempil Heat Indicators and/or a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. At the conclusion of the shift this QA Lead Inspector discussed and reviewed the work performed by the QAI's in regards to the various observations and the verifications of the WPS's, consumables, welding parameters, preheat and interpass temperatures as described above. The QAI observations of the QC inspection and verification of the welding parameters performed on this date appeared to comply with the contract specifications with no issues noted.

Item A, Para. 1B

This QA SPCM Lead Inspector verified the fit-up and planar alignment of the Seismic Performance Critical Member (SPCM) Orthotropic Box Girder (OBG) field splice identified as 13W-14W-A. This QAI utilized a Cambridge Gage to measure planar alignment and a pair of inside calipers, with a digital read out, to measure the root opening. At the conclusion of the QC/QA joint inspection of the planar alignment there appeared to be four (4) areas that exceeded the minimum requirements of the contract specifications which were located at following Y axis; 1)Y=8300 mm, 280 mm long and 3.5 mm misalignment, 2)Y=9330 mm, 120 mm long and 3 mm misalignment, 3)Y=10140 mm, 130 mm long and 4.0 mm misalignment and 4). T=14110 mm, 1370 mm long and 3.5 mm misalignment . The average root opening was measured as 16 mm wide and no gaps exceeding 2 mm were noted at the steel backing bar to the B-side of the "A" deck. The QC/QA inspection/verification was performed at the request of Bonifacio Daquinag, Jr. QC department generated the documentation, Planar Misalignment Map, with signatures of this QAI and QC Lead Inspector, Bonifacio Daquinag, Jr. which was submitted to the Department for review by the Welding Quality Control Manager (WQCM), James Bowers. The time of the joint inspection was approximately 0800.

Later in the shift, the approval acquired to proceed with welding of this SPCM "A" deck field splice was received via e-mail from QA Supervisor, William Levell, at approximately 1350, which was a forwarded electronic message from Karen Wang.

Item C, Para. 1B

Mr. Hager contacted and informed this QA lead inspector of the condition of the planar alignment of the bottom plate field splice identified as 13E-14E-D1. The issue appeared to be the 8 mm planar misalignment of the field splice. Upon further review with Mr. Hager and QC Lead Inspector, Bonifacio Daquinag, Jr. it was discovered that the bottom plate of the OBG E14 is 35 mm thick and the thickness of the OBG E13 is 30 mm thick utilizing the weld maps as a reference and confirmed by field measurements. This action resolves the planar misalignment and no issue exists.

For additional detailed information see the individual QAI, submitted and approved, Weld Inspection Reports (WIR).
This QA Inspector continued the daily review of field inspection reports and update of the field document control tracking records regarding the Orthotropic Box Girders (OBG, Longitudinal and Transverse "A" Deck Stiffeners, Deck Access Holes and the Tower Shear plates). The daily updates and project information was provided by QAI Art Peterson.

Summary of Conversations:

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There were general conversations with Quality Control Lead Inspector, Bonifacio Daquinag, Jr., at the start of the shift regarding the location of welding, inspection personnel scheduled for this shift.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Reyes,Danny	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer